

# GRANGEVILLE WATER DEPARTMENT (PWS 2250023) SOURCE WATER ASSESSMENT FINAL REPORT

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April 17, 2002



## State of Idaho Department of Environmental Quality

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## Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for Grangeville Water Department, Grangeville, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The Grangeville Water Department drinking water system consists of four active wells and one backup well. All of the wells except for the Cash Well have a moderate susceptibility to all potential contaminant categories: inorganic compounds (IOCs), volatile organic compounds (VOCs), synthetic organic compounds (SOCs), and microbial contaminants. The VOC trichloroethylene (TCE) was detected in August 2001 and again in September 2001 in the Cash Well, resulting in an automatic high susceptibility to VOCs for that well. The Cash Well has a moderate susceptibility to IOCs, SOCs, and microbial contaminants. The protective nature of the soil composition of the area and the maintenance and flood protection of the wells as well as the moderate land uses in the area of the wells account for the overall susceptibility of the system.

The current water chemistry issue that affects the Grangeville Water Department drinking water system pertains to the VOC detection in the Cash Well. On August 22, 2001, TCE was detected in the Cash Well at 1.1 parts per billion (ppb) and again during a confirmation test performed on September 26, 2001, TCE was detected at 1.2 ppb. Though these detections are below the maximum contaminant level (MCL) of 5 ppb, any VOC detection within a drinking water source result in an automatic high susceptibility rating.

The IOCs fluoride and nitrate have been detected in the water system at levels below the MCLs. Total coliform bacteria were detected in the distribution system in 1992 and 1993 but none have been detected since. No SOCs have been detected in the water system thus far.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Grangeville Water Department system, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system’s components and its capacity). Also, disinfection practices should be increased if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellheads. An investigation should be implemented and documented in determining the cause of the new detection of TCE in the backup Cash Well. As much of the designated protection areas are outside the direct jurisdiction of the Grangeville Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, sanitary standards should be maintained regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

A strong public education program should be a primary focus of any drinking water protection plan as the delineations encompass much urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are major transportation corridors through the delineation, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

# SOURCE WATER ASSESSMENT FOR GRANGEVILLE WATER DEPARTMENT, GRANGEVILLE, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

### Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the EPA to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

### Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## **Section 2. Conducting the Assessment**

### **General Description of the Source Water Quality**

The public drinking water system for the Grangeville Water Department is comprised of five ground water wells that serve approximately 3,226 people through 1,430 connections. The Park well is located on the north side of Grangeville within the park. The Myrtle St and Cash wells are located on the east side of Grangeville. The Myrtle St Well is approximately one-fourth of a mile north of Highway 13 and the Cash Well (the backup well) is approximately one-eighth of a mile north of Highway 13 as it comes into town from the east. The Eimers Well is northwest of Grangeville, approximately one-fourth mile west of Highway 95 as it exits the town. The Spencer Well is south of Grangeville by about one-half mile (Figure 1).

The current water chemistry issue that affects the Grangeville Water Department drinking water system pertains to a VOC detection in the Cash Well. On August 22, 2001, TCE was detected in the Cash Well at 1.1 ppb and again during a confirmation test performed on September 26, 2001, TCE was detected at 1.2 ppb. Degreasers are strongly suspected and should be investigated. Though these detections are below the MCL of 5 ppb, any VOC detection within a drinking water source result in an automatic high susceptibility rating.

The IOCs fluoride and nitrate have been detected in the water system at levels below the MCLs. Total coliform bacteria were detected in the distribution system in 1992 and 1993 but none have been detected since. No SOC's have been detected in the water system thus far.

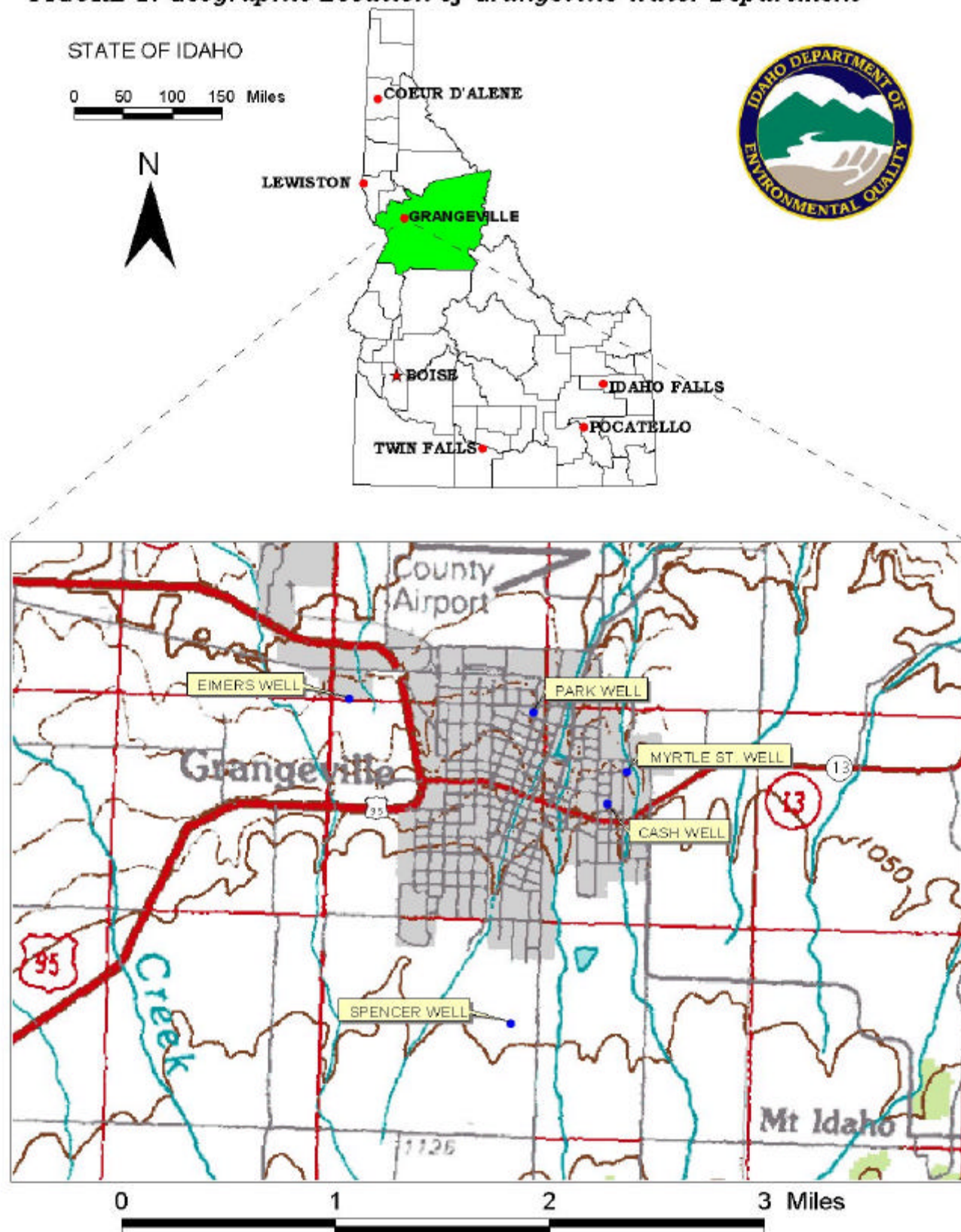
### **Defining the Zones of Contribution – Delineation**

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the basalt aquifer of the Clearwater Plateau in the vicinity of the Grangeville Water Department wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including the Grangeville Water Department well logs and operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model for the area of the Grangeville and Country Court source wells is based on little known information and scarce data. Geologic maps at a scale of 1:250,000 are used to interpret the geology (Gaston and Bennett, 1979; Rember and Bennett, 1979). The Grangeville source wells supply water to the Grangeville community. Four nearby surface water bodies are thought to influence the ground water flow regime; these are the Salmon River, Johns Creek, Graves Creek and the South Fork of the Clearwater River. Based on well logs, the wells are located in fractured basalt.

Wells located in basalt aquifers in northern Idaho produce up to 2,500 gpm. Discharge from the Grangeville wells is less than 1,100 gpm. Discharge from the Country Court well is 100 gpm. Most of the ground water found in basalts is present in the vesicular contact, fracture zones or in the sediments between basalt flows. Static water level data exist for all source wells.

**FIGURE 1. Geographic Location of Grangeville Water Department**



Columbia River basalt covers most of the Grangeville area (Gaston and Bennett, 1979). The source wells derive water from the fractured basalt aquifer. The local hydraulic gradient is generally toward the north; although, the Eimers, Park and Eglund wells have lower water elevations that appear as a bullseye on the ground water contour map based on water level data from the test points.

The geology of the Grangeville area is complex. Based on the geologic maps by Gaston and Bennett (1979) and Rember and Bennett (1979) several structural features exist to the north, east and south of Grangeville. The water elevations at the test points do not support any features within the source well and test point area.

The Salmon River cuts through hundreds of feet of basalt to the west of Grangeville. The river is assumed to gain water from the rock and to discharge into the Snake River. The Salmon River is thought to be a gaining creek for this reason and because it flows all year. Water in the river during baseflow conditions is from ground water.

Johns Creek and Graves Creek are also thought to be gaining because they flow year round. Headwaters of Johns Creek begin about 10,000 feet southeast of the Monastery of St. Gertrudes (the Monastery is southwest of Cottonwood). The headwaters of Graves Creek begin about 10 miles southeast of the Monastery. The creeks merge, downcut into the basalt and discharge into the Salmon River approximately 11.2 miles south of Cottonwood.

The South Fork of the Clearwater River is believed to be gaining. The river cuts through the basalt acquiring water from the aquifer. The river also flows year round. The headwaters of the South Fork begin about four miles south of Harpster. The South Fork then discharges into the main fork of the Clearwater River.

No aquifer recharge data are available for the Grangeville area. In a study by Wyatt-Jaykim (1994) recharge to the central basin (Lewiston basin) was modeled as 1 inch/year; 2 inches/year was selected in the higher areas. Because the Grangeville area lies at a higher elevation than much of the basin, precipitation rates are higher at Grangeville at 22.7 inches/year (Castelin, 1976) versus 13 inches/year in Lewiston-Clarkston (Cohen and Ralston, 1980). Recharge is therefore expected to be greater at Grangeville than at Lewiston.

The capture zones delineated herein are based upon limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data.

The delineated source water assessment areas for the Grangeville Water Department wells differ depending on their location within the area. The wells that are located within the city of Grangeville have delineated areas that are affected by well interference. These delineated areas can best be described as split corridors fanning out by approximately two miles from the wellhead in different directions depending on their location and the location of the interfering well. The delineation of the Park Well is affected by the Eimers Well northwest of Grangeville. Its delineated area fans out to the northwest and to the southwest (Figure 5, Appendix A). The Myrtle St Well is affected by the Cash Well south of it. Its delineated area fans out to the east and also to the southwest (Figure 4, Appendix A). The Cash Well is affected by the Spencer Well southwest of it. Its delineated area extends south and west (Figure 2, Appendix A). The delineated areas of the Spencer and Eimers wells can best be described as pie-slice shaped corridors that extend approximately 2 miles from the wellheads. The delineation of the

Spencer Well extends directly south from the wellhead (Figure 6, Appendix A) and the delineation of the Eimers Well extends directly west of the wellhead (Figure 3, Appendix A). The actual data used by the University of Idaho in determining the source water assessment delineation areas are available from DEQ upon request.

### **Identifying Potential Sources of Contamination**

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use surrounding the Grangeville Water Department wells varies depending on their location. Land use within the immediate area of the Myrtle St, Cash, and Park wells consists of mostly urban and residential land use while the surrounding area is predominantly rangeland. Land use within the immediate area and the surrounding area of the Spencer Well consists predominantly of residential property with private wells and septic systems. The land adjacent to the Eimers Well was, until recently, the site of a very large lumber milling operation for over 30 years. Some industry is still present in the surrounding area of the well.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

### **Contaminant Source Inventory Process**

A two-phased contaminant inventory of the study area was conducted in October and November 2001. The first phase involved identifying and documenting potential contaminant sources within the Grangeville Water Department source water assessment area (Figures 2 through 6 in Appendix A) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water assessment areas of the Grangeville wells that are located within the city (the Park, Myrtle St, and Cash wells) contain several potential contaminant sources. These sources include automotive repair businesses, underground storage tank (UST) sites, leaking underground storage tank (LUST) sites, mines, sites regulated under the Resource Conservation and Recovery Act (RCRA), sites regulated under the Superfund Amendments and Reauthorization Act (SARA), National Pollution Discharge Elimination System (NPDES) sites, and a site regulated under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). The delineations also include

Highway 13 (Park, Myrtle St, and Cash wells), Highway 95 (Park Well), and the Camas Prairie Railnet (Park and Eimers wells). These transportation corridors can contribute all classes of contaminants to the aquifer in the event of an accidental spill or release. All of the delineations cross Threemile Creek, a surface water that can contaminate the wells via surface runoff. See Tables 3 through 7 in Appendix A.

### **Section 3. Susceptibility Analyses**

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix B contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

#### **Hydrologic Sensitivity**

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is moderate for all of the wells of the Grangeville Water Department (Table 2). Regional soil data places the delineated areas within poor to moderately drained soils. In addition, the well logs of the Park Well, the Myrtle Well, and the Eimers Well indicate the presence of greater than 50 feet of clay layers interspersed within the fractured basalt layers. The vadose zones in the wells are a combination of basalt and gravel.

#### **Well Construction**

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was completed for the Grangeville Water Department wells in 2001.

All of the Grangeville Water Department wells except for the Myrtle Well rated moderate for system construction. The Myrtle Well rated low for system construction. A 2001 sanitary survey indicated that all of the wellhead and surface seals are maintained to standards and that all of the wells are properly protected from surface flooding. The available well logs provided useful well construction information. This information is summarized in Table 1 below.

**Table 1. Grangeville Water Department Well Construction Summary Information**

Well	Well Depth (ft)	Water Table Depth (ft)	Casing: diameter/ thickness (in)	Casing: depth (ft)/ formation	Surface seal: depth (ft)/ formation	Screened Interval (ft)	Drill Year	Sanitary Survey Elements (A/B) <sup>1</sup>
Cash Well	406	141	NI	NI	NI	NI	1975	Yes/Yes
Eimers Well	715	76	12/0.313 10/0.313	64/lava 622/seamed porous lava	NI	None	1967	Yes/Yes
Myrtle St Well	728	387	20/0.375 14/0.375	116/solid black basalt 622/solid black basalt	116/solid black basalt	664-704	1994	Yes/Yes
Park Well	806	290	12/0.375	633/black basalt (hard)	70/black basalt (m.hard)	None	1977	Yes/Yes
Spencer Well	628	137	12/NI 10/NI	117/black basalt (hard)	NI	None	1967	Yes/Yes

<sup>1</sup> A = Well and surface seal in compliance; B = Protected from surface flooding

NI = no information was available

A determination was made as to whether current public water system (PWS) construction standards are being met. Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Twelve to twenty-inch diameter wells require a 0.375-inch thick casing. Ten-inch diameter wells require a 0.365-inch thick casing.

### Potential Contaminant Source and Land Use

All of the wells of the Grangeville Water Department except for the Spencer Well rated moderate for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products, chlorinated solvents), and SOC (i.e. pesticides), and low for microbial contaminants (i.e. bacteria). The Spencer Well rated low for all potential contaminant categories. The number of potential contaminant sources surrounding the Myrtle St, Park, and Cash wells contributed to their land use scores. The undetermined agricultural land and the past industrial usage of the Eimers Well contributed to its land use scores. The limited number of sources within the delineation of the Spencer Well and the predominant residential and rangeland surrounding that well reflects the low overall land use scores for the well.

## Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. In this case, the VOC TCE was detected in the Cash Well in August and September of 2001, resulting in an automatic high susceptibility to VOCs for that well. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, all of the Grangeville Water Department wells except for the Cash Well have a moderate susceptibility to all potential contaminant categories. The Cash Well has an automatic high susceptibility to VOCs and a moderate susceptibility to IOCs, SOCs, and microbial contaminants.

**Table 2. Summary of Grangeville Water Department Susceptibility Evaluation**

Well	Susceptibility Scores <sup>1</sup>									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Cash Well	M	M	M	M	L	M	M	H*	M	M
Eimers Well	M	M	M	M	L	M	M	M	M	M
Myrtle St Well	M	M	M	M	L	L	M	M	M	M
Park Well	M	M	M	M	L	M	M	M	M	M
Spencer Well	M	L	L	L	L	M	M	M	M	M

<sup>1</sup>H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H\* = Detection of the VOC TCE in 2001

## Susceptibility Summary

Overall, all of the Grangeville Water Department wells except for the Cash Well (the backup well) have a moderate susceptibility to all potential contaminant categories. The VOC TCE was detected twice in 2001 in the Cash Well, resulting in an automatic high susceptibility to VOCs for that well. The Cash Well has a moderate susceptibility to IOCs, SOCs, and microbial contaminants. The protective nature of the soil composition of the area and the maintenance and flood protection of the wells as well as the moderate land use of the area contributed to the overall susceptibility of the system.

The current water chemistry issue that affects the Grangeville Water Department drinking water system pertains to the VOC detection in the Cash Well. On August 22, 2001, TCE was detected in the Cash Well at 1.1 ppb and again during a confirmation test performed on September 26, 2001, TCE was detected at 1.2 ppb. Though these detections are below the MCL of 5 ppb, any VOC detection within a water source results in an automatic high susceptibility rating.

The IOCs fluoride and nitrate have been detected in the water system at levels below the MCLs. Total coliform bacteria were detected in the distribution system in 1992 and 1993 but none have been detected since. No SOCs have been detected in the water system thus far.

## **Section 4. Options for Drinking Water Protection**

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Grangeville Water Department system, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Also, disinfection practices should be increased if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellheads. An investigation should be implemented and documented to determine the cause of the new detection of TCE in the backup Cash Well. As much of the designated protection areas are outside the direct jurisdiction of the Grangeville Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations encompass much urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are major transportation corridors through the delineation, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the DEQ or the Idaho Rural Water Association.

## **Assistance**

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office      (208) 799-4370

State DEQ Office      (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with drinking water protection (formerly wellhead protection) strategies.

## POTENTIAL CONTAMINANT INVENTORY

### LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund®, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100-year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Appendix A

Grangeville Water Department

Delineation Maps

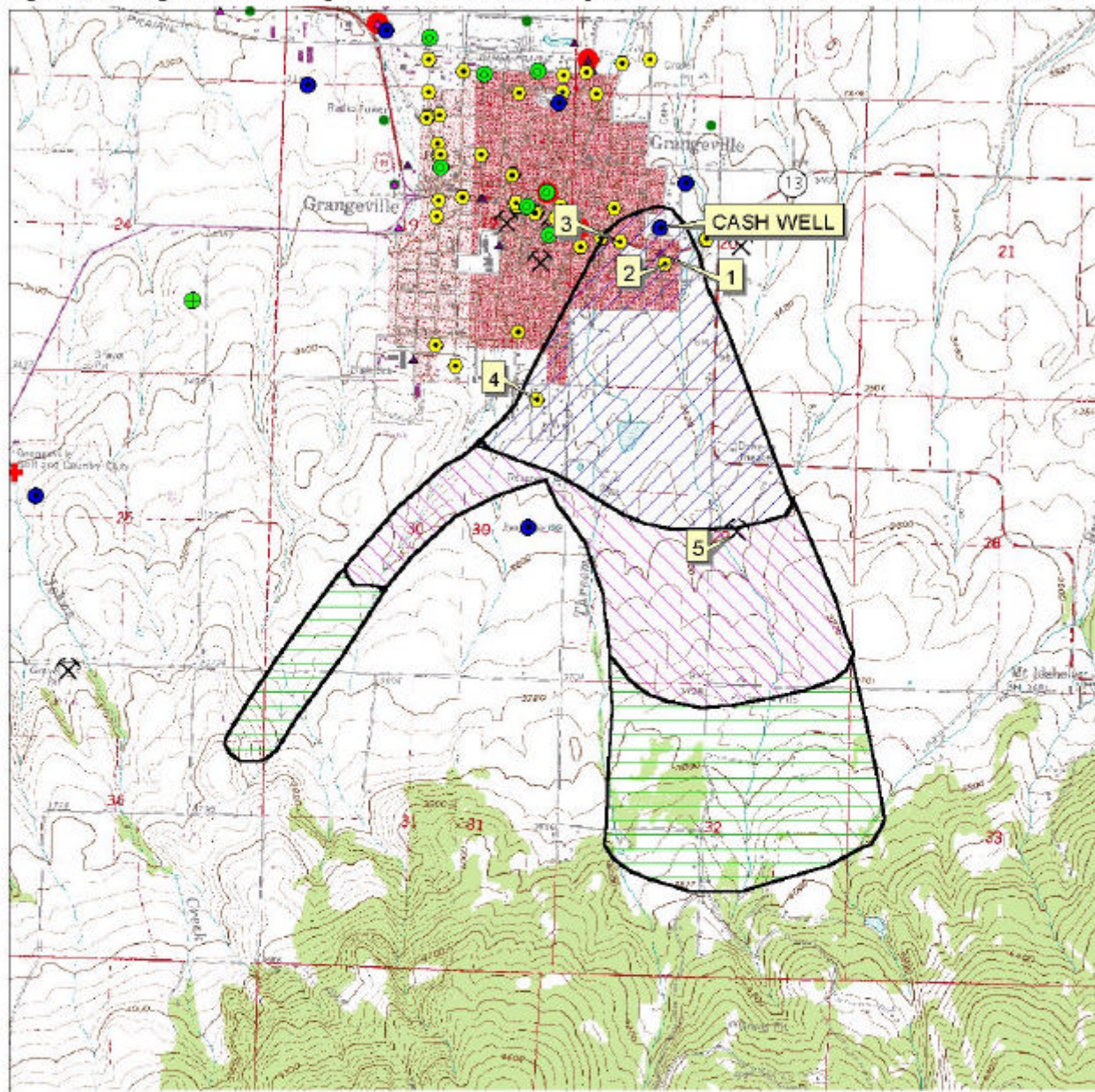
Figures 2, 3, 4, 5, and 6

and

Potential Contaminant Inventories

Tables 3, 4, 5, 6, and 7

**Figure 2. Grangeville Water Department Delineation Map and Potential Contaminant Source Locations**

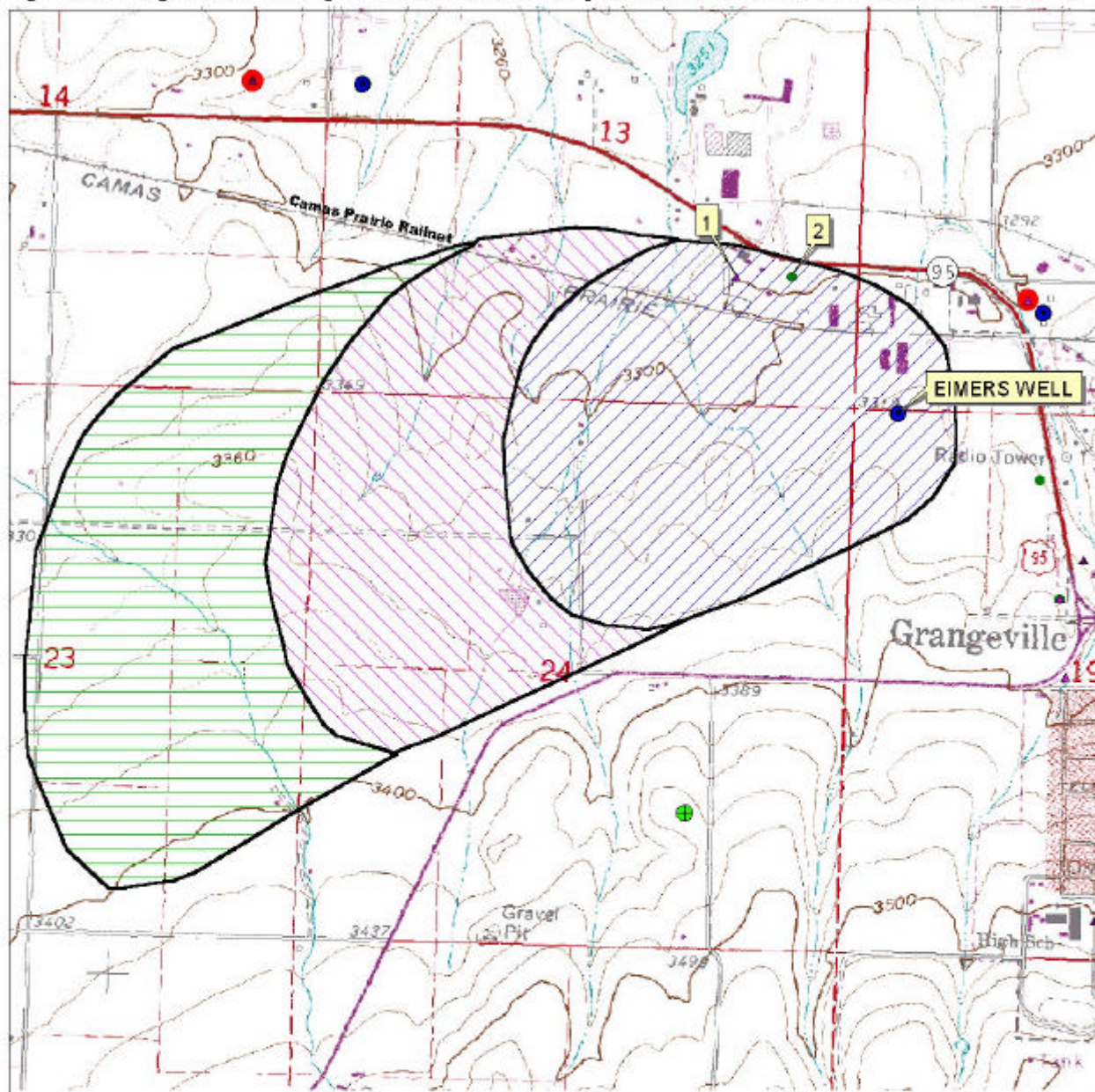


0 0.5 1 1.5 2 2.5 3 Miles



**PWS# 2250023**  
**CASH WELL**

Figure 3. Grangeville Water Department Delineation Map and Potential Contaminant Source Locations



0 0.5 1 Miles



**PWS# 2250023**  
**EIMERS WELL**

Figure 4. Grangeville Water Department Delineation Map and Potential Contaminant Source Locations

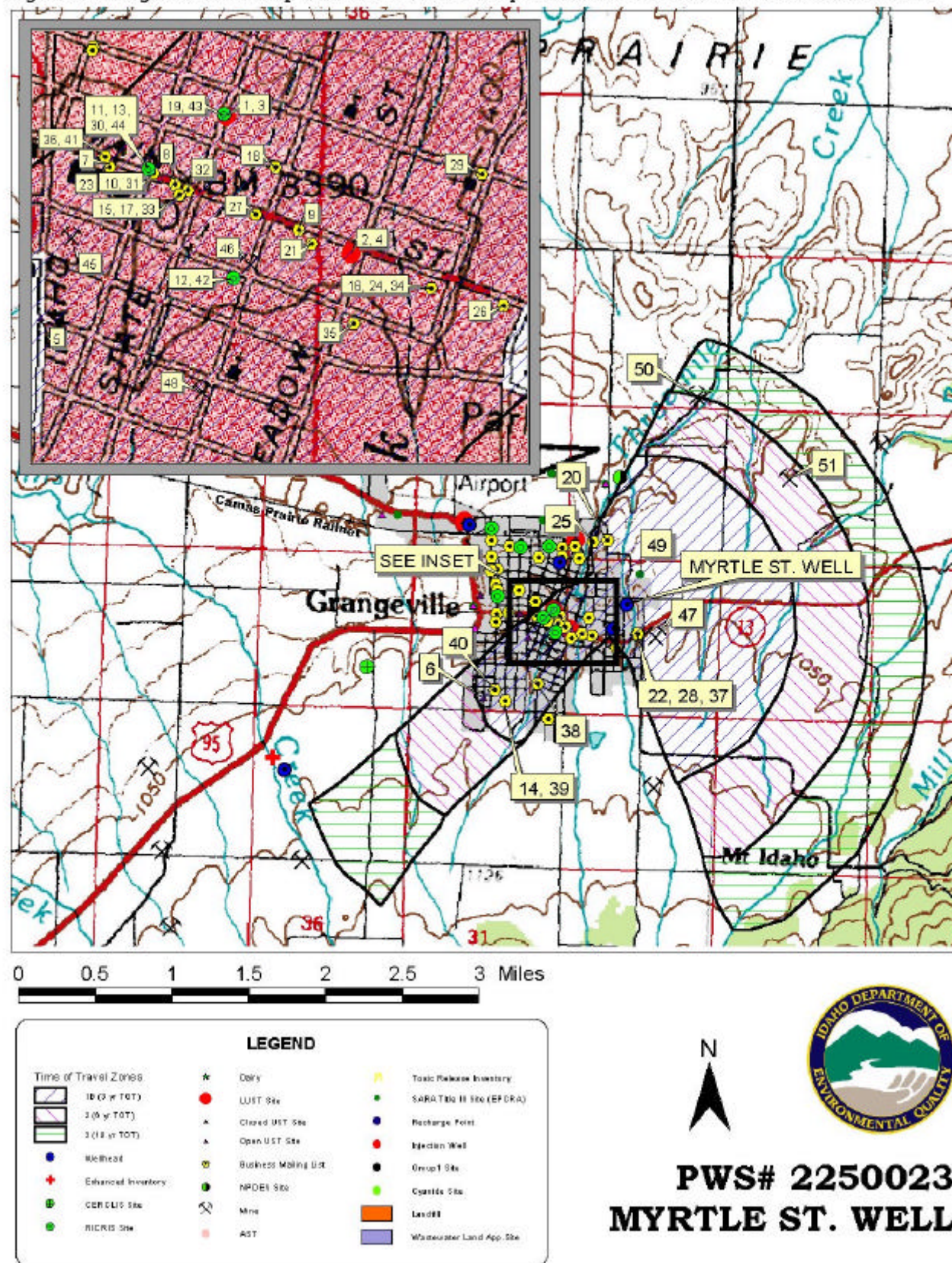


Figure 5. Grangeville Water Department Delineation Map and Potential Contaminant Source Locations

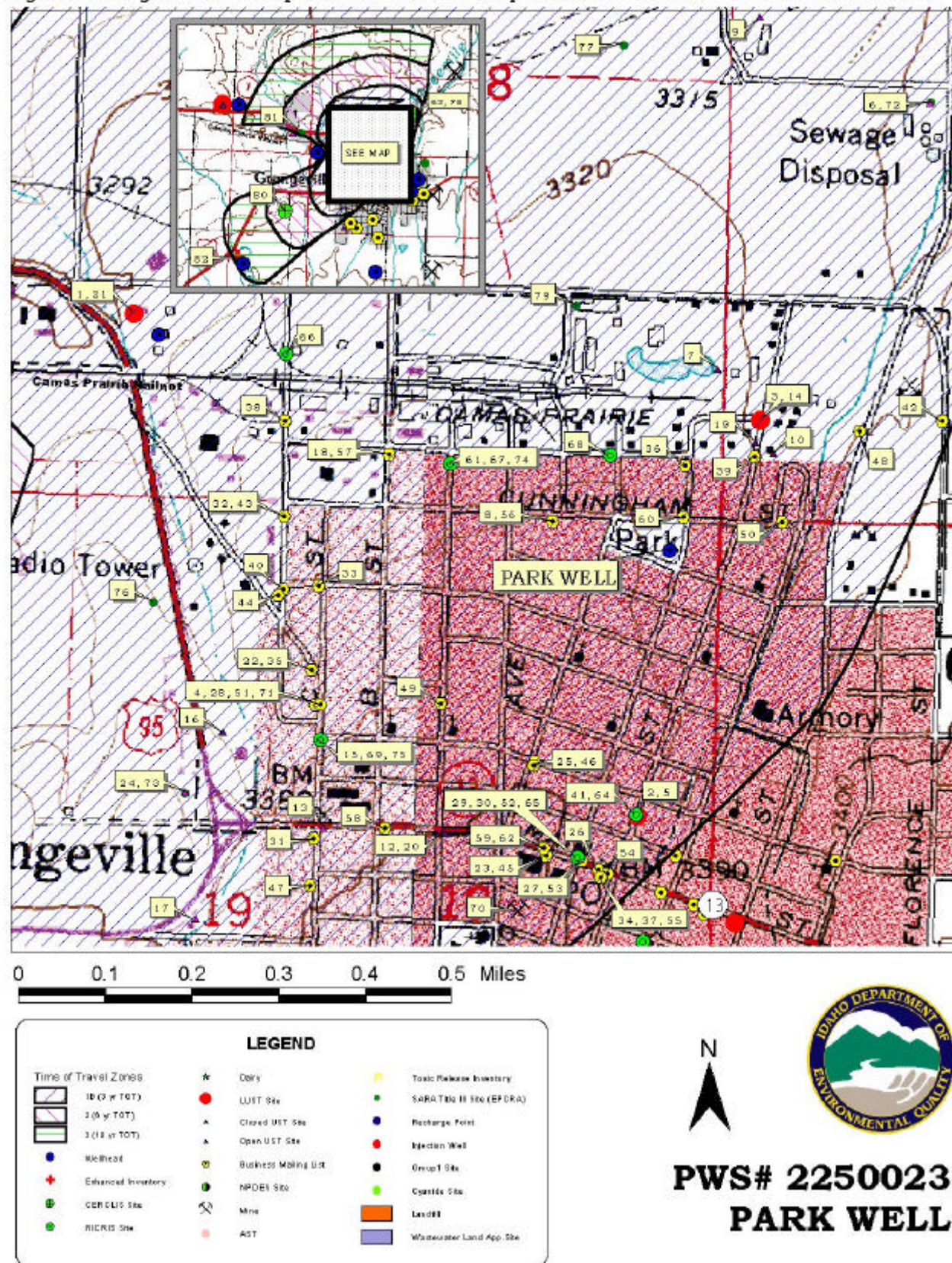
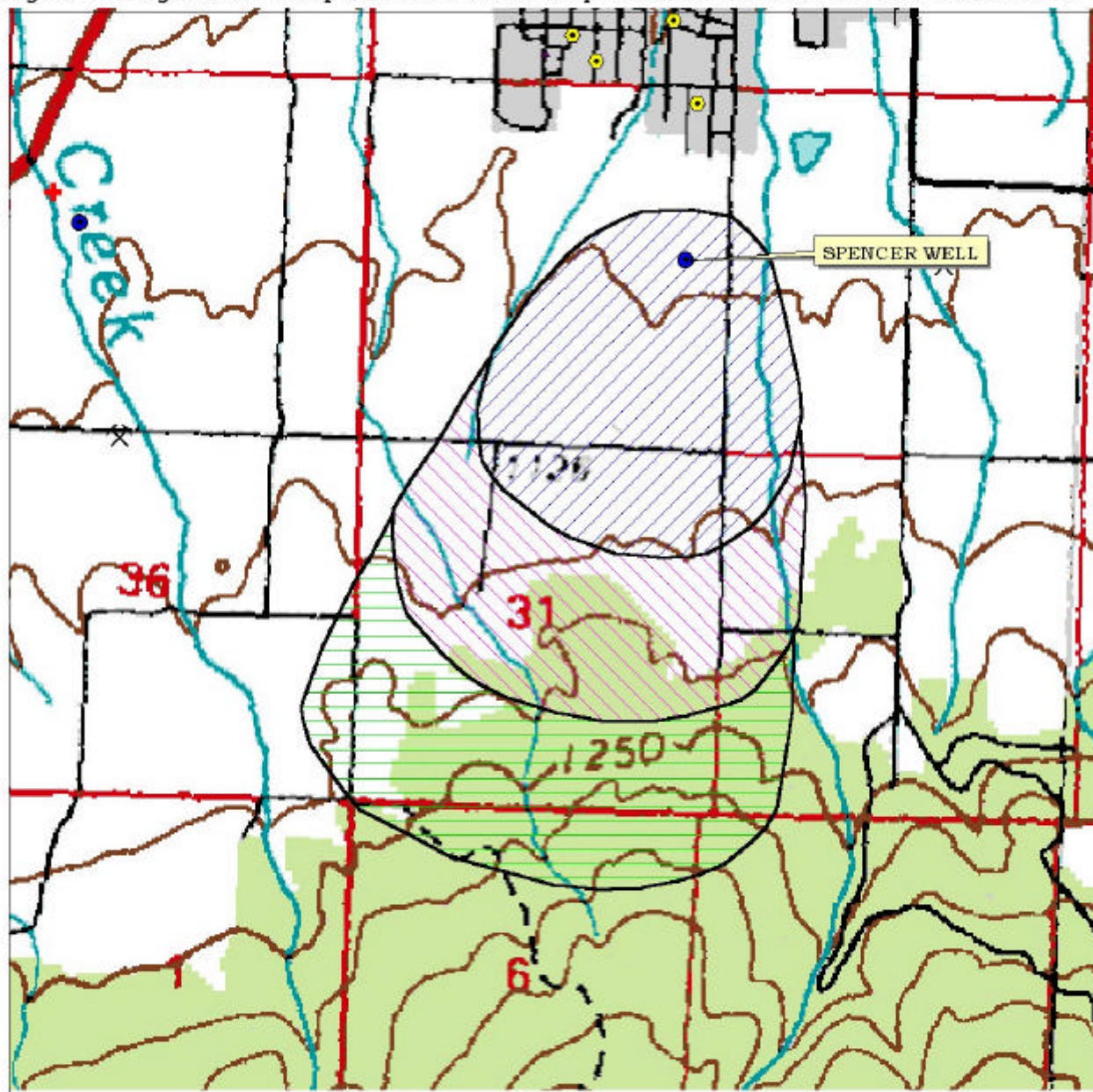


Figure 6. Grangeville Water Department Delineation Map and Potential Contaminant Source Locations



0 0.2 0.4 0.6 0.8 1 Miles



**PWS# 2250023**  
**SPENCER WELL**

**Table 3. Grangeville Water Department Cash Well Potential Contaminant Inventory.**

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
1	UST-Open	0 – 3	Database Search	VOC, SOC
2	Tile-Ceramic-Contractors & Dealers	0 – 3	Database Search	IOC, VOC, SOC
3	Tire-Dealers-Retail	0 – 3	Database Search	VOC, SOC
4	General Contractors	0 – 3	Database Search	IOC, VOC, SOC
5	Mine	3 – 6	Database Search	IOC, VOC, SOC
	Highway 13	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Threemile Creek	0 – 10	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup>UST = underground storage tank<sup>2</sup>TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead<sup>3</sup>IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**Table 4. Grangeville Water Department Eimers Well Potential Contaminant Inventory.**

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
1	UST-Open, Lumber Mill-Historical	0 – 3	Database Search	IOC, VOC, SOC
2	SARA Site	0 – 3	Database Search	IOC, SOC, Microbes
	Camas Prairie Railnet	0 – 10	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup>UST = underground storage tank, SARA = Superfund Amendments and Reauthorization Act<sup>2</sup>TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead<sup>3</sup>IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**Table 5. Grangeville Water Department Myrtle St Well Potential Contaminant Inventory.**

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
1, 3	LUST-Site Cleanup Completed, Impact: Groundwater; UST-Closed	0 – 3	Database Search	VOC, SOC
2, 4	LUST-Site Cleanup Completed, Impact: Groundwater; UST-Open	0 – 3	Database Search	VOC, SOC
5	UST-Closed	0 – 3	Database Search	VOC, SOC
6	UST-Closed	0 – 3	Database Search	VOC, SOC
7	UST-Closed	0 – 3	Database Search	VOC, SOC
8	Photo Finishing-Retail	0 – 3	Database Search	IOC, VOC
9	Hardware-Retail	0 – 3	Database Search	IOC, VOC, SOC
10	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
11	Automobile Parts & Supplies-Retail	0 – 3	Database Search	VOC, SOC
12	Farm Equipment (Wholesale)	0 – 3	Database Search	IOC, VOC, SOC
13, 30	Automobile Radiator-Repairing; Engines-Rebuilding & Exchanging	0 – 3	Database Search	IOC, VOC, SOC
14	Automobile Wrecking (Wholesale)	0 – 3	Database Search	IOC, VOC, SOC
15	Recycling Centers (Wholesale)	0 – 3	Database Search	VOC
16	Printers	0 – 3	Database Search	IOC, VOC
17	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
18	Laboratories-Dental	0 – 3	Database Search	IOC, VOC, SOC
19, 43	Automobile Dealers-New Cars; RCRA Site	0 – 3	Database Search	VOC, SOC
20	Cemeteries	0 – 3	Database Search	IOC, SOC, Microbes
21	Fire Departments	0 – 3	Database Search	IOC, VOC, SOC
22, 28	Veterinarians	0 – 3	Database Search	IOC, VOC, SOC, Microbes
23	County Government-Transportation Program	0 – 3	Database Search	IOC, VOC, SOC

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
24, 34	Newspapers (Publishers)	0 – 3	Database Search	IOC, VOC
25	Sawmill Equipment & Supplies-Manufacturers	0 – 3	Database Search	IOC, VOC, SOC
26	Tire-Dealers-Retail	0 – 3	Database Search	VOC, SOC
27	Hardware-Retail	0 – 3	Database Search	IOC, VOC, SOC
29	Funeral Directors	0 – 3	Database Search	IOC, SOC
31	Commercial Printing	0 – 3	Database Search	IOC, VOC
32	Leather Goods (Manufacturers)	0 – 3	Database Search	IOC, VOC, SOC, Microbes
33	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
35	Taxidermists	0 – 3	Database Search	IOC, VOC, SOC, Microbes
36	Automobile Dealers-Used Cars	0 – 3	Database Search	IOC, VOC, SOC
37	Generators-Electric (Wholesale)	0 – 3	Database Search	IOC, VOC
38	Excavating Contractors	0 – 3	Database Search	IOC, VOC, SOC
39	Truck Renting & Leasing	0 – 3	Database Search	VOC, SOC
40	Garbage Collection	0 – 3	Database Search	IOC, VOC, SOC, Microbes
41	Automobile Parts & Supplies-Retail	0 – 3	Database Search	VOC, SOC
42	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
44	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
45	Mine	0 – 3	Database Search	IOC, VOC, SOC, Microbes
46	Mine	0 – 3	Database Search	IOC, VOC, SOC, Microbes
47	Mine	0 – 3	Database Search	IOC, VOC, SOC, Microbes
48	Mine	0 – 3	Database Search	IOC, VOC, SOC, Microbes
49	SARA Site	0 – 3	Database Search	IOC, VOC, SOC
50	Mine	3 – 6	Database Search	IOC, VOC, SOC
51	Mine	3 – 6	Database Search	IOC, VOC, SOC
	Highway 13	0 – 10	GIS Map	IOC, VOC, SOC, Microbes
	Threemile Creek	0 – 10	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup>LUST = leaking underground storage tank, UST = underground storage tank, SARA = Superfund Amendments and Reauthorization Act, RCRA = Resource Conservation and Recovery Act, NPDES = National Pollution Discharge Elimination System

<sup>2</sup>TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>3</sup>IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

**Table 6. Grangeville Water Department Park Well Potential Contaminant Inventory.**

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
1, 21	LUST-Site Cleanup Completed, Impact: Unknown; UST-Open	0 – 3	Database Search	VOC, SOC
2, 5	LUST-Site Cleanup Completed, Impact: Groundwater; UST-Closed	0 – 3	Database Search	VOC, SOC
3, 14	LUST-Site Cleanup Completed, Impact: Unknown; UST-Closed	0 – 3	Database Search	VOC, SOC
4, 28	UST-Closed; Trucking-Heavy Hauling	0 – 3	Database Search	IOC, VOC, SOC
6, 71	UST-Closed; SARA Site	0 – 3	Database Search	IOC, VOC, SOC
7	UST-Closed	0 – 3	Database Search	VOC, SOC

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
8	UST-Closed	0 – 3	Database Search	VOC, SOC
9	UST-Open	0 – 3	Database Search	VOC, SOC
10	UST-Closed	0 – 3	Database Search	VOC, SOC
11	UST-Closed	0 – 3	Database Search	VOC, SOC
12	UST-Closed	0 – 3	Database Search	VOC, SOC
13	UST-Open	0 – 3	Database Search	VOC, SOC
15	UST-Closed	0 – 3	Database Search	VOC, SOC
16	UST-Closed	0 – 3	Database Search	VOC, SOC
17	UST-Open	0 – 3	Database Search	VOC, SOC
18, 56	UST-Closed; Grain-Dealers (Wholesale)	0 – 3	Database Search	IOC, VOC, SOC
19	UST-Closed	0 – 3	Database Search	VOC, SOC
20	UST-Closed	0 – 3	Database Search	VOC, SOC
22, 35	UST-Closed; Automobile Body-Repairing & Service	0 – 3	Database Search	VOC, SOC
23	UST-Closed	0 – 3	Database Search	VOC, SOC
24, 72	UST-Open; SARA Site	0 – 3	Database Search	IOC, VOC, SOC
25	General Contractors	0 – 3	Database Search	IOC, VOC, SOC
26	Photo Finishing-Retail	0 – 3	Database Search	IOC, VOC
27	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
29	Automobile Parts & Supplies-Retail	0 – 3	Database Search	VOC, SOC
30, 51	Automobile Radiator-Repairing; Engines-Rebuilding & Exchanging	0 – 3	Database Search	IOC, VOC, SOC
31	Tires-Dealers-Retail	0 – 3	Database Search	VOC, SOC
32	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
33	Automobile Body-Repairing & Painting	0 – 3	Database Search	IOC, VOC, SOC
34	Recycling Centers (Wholesale)	0 – 3	Database Search	VOC
36	Trucking-Heavy Hauling	0 – 3	Database Search	IOC, VOC, SOC
37, 54	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
38	Machine Shops	0 – 3	Database Search	IOC, VOC, SOC
38	Trucking-Local Cartage	0 – 3	Database Search	IOC, VOC, SOC
39	Machine Shops	0 – 3	Database Search	IOC, VOC, SOC
40	Automobile Dealers-New Cars	0 – 3	Database Search	VOC, SOC
41	Cemeteries	0 – 3	Database Search	IOC, SOC, Microbes
42	Trucking-Motor Freight	0 – 3	Database Search	IOC, VOC, SOC
44	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC
45	Geological Laboratories	0 – 3	Database Search	IOC, VOC, SOC
46	Sheet Metal Work Contractors	0 – 3	Database Search	IOC, VOC, SOC
47	Sawmill Equipment & Supplies-Mfrs	0 – 3	Database Search	IOC, VOC, SOC
48	Laundries	0 – 3	Database Search	IOC, SOC, Microbes
49	Recreational Vehicle Parks	0 – 3	Database Search	IOC, VOC, SOC, Microbes
50, 70	Gasoline-Wholesale; SARA Site	0 – 3	Database Search	IOC, VOC, SOC
52	Commercial Printing	0 – 3	Database Search	IOC, VOC
53	Leather Goods (Manufacturers)	0 – 3	Database Search	IOC, VOC, SOC, Microbes
55	Farm Equipment (Wholesale)	0 – 3	Database Search	IOC, VOC, SOC
57	Hospitals	0 – 3	Database Search	IOC, SOC, Microbes
58	Automobile Dealers-Used Cars	0 – 3	Database Search	IOC, VOC, SOC
59	Automobile Repairing & Service	0 – 3	Database Search	IOC, VOC, SOC

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
60, 66, 73	Fertilizers-Manufacturers; RCRA Site; SARA Site	0 – 3	Database Search	IOC, SOC, Microbes
61	Automobile Parts & Supplies-Retail	0 – 3	Database Search	VOC, SOC
62, 77	NPDES Site-Municipal Discharge; SARA Site	0 – 3	Database Search	IOC, Microbes
64	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
65	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
67	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
68, 74	RCRA Site; SARA Site-Telephone Communications	0 – 3	Database Search	IOC
69	Mine	0 – 3	Database Search	IOC, VOC, SOC
75	SARA Site-Gasoline Service Stations	0 – 3	Database Search	IOC, VOC, SOC
76	SARA Site	0 – 3	Database Search	IOC, VOC, SOC
78	SARA Site	0 – 3	Database Search	IOC, VOC, SOC
79	CERCLA Site-Landfill	3 – 6	Database Search	IOC, VOC, SOC
80	SARA Site	3 – 6	Database Search	IOC, VOC, SOC
81	300 and 200 gallon diesel tanks	10	Enhanced Inventory	IOC, VOC, SOC
	Highway 95	0 – 10	GIS Map	IOC, VOC, SOC, Microbes
	Camas Prairie Railnet	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Highway 13	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Threemile Creek	0 – 3	GIS Map	IOC, VOC, SOC, Microbes

<sup>1</sup>LUST = leaking underground storage tank, UST = underground storage tank, SARA = Superfund Amendments and Reauthorization Act, RCRA = Resource Conservation and Recovery Act, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, NPDES = National Pollution Discharge Elimination System

<sup>2</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>3</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

**Table 7. Grangeville Water Department Spencer Well Potential Contaminant Inventory.**

Site	Description of Source <sup>1</sup>	TOT <sup>2</sup> Zone	Source of Information	Potential Contaminants <sup>3</sup>
	Threemile Creek	0 – 6	GIS Map	IOC, VOC, SOC, Microbes

<sup>2</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>3</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

## Appendix B

### Grangeville Water Department Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5    Low Susceptibility

6 - 12   Moderate Susceptibility

≥ 13    High Susceptibility

## 1. System Construction

SCORE

Drill Date	1/1/78	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2001
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0

Total System Construction Score 4

## 2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2

Total Hydrologic Score 4

## 3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
-----------	-----------	-----------	-----------------

Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	YES	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0

## Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	4	6	6	2
(Score = # Sources X 2 ) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	3	2	
4 Points Maximum		2	3	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0

Total Potential Contaminant Source / Land Use Score - Zone 1B 10 11 10 4

## Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	

Potential Contaminant Source / Land Use Score - Zone II 3 3 3 0

## Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	

Total Potential Contaminant Source / Land Use Score - Zone III 2 2 2 0

Cumulative Potential Contaminant / Land Use Score 15 16 15 4

## 4. Final Susceptibility Source Score

11 11 11 10

## 5. Final Well Ranking

Moderate High Moderate Moderate

## Ground Water Susceptibility Report

Public Water System Name :

GRANGEVILLE WATER DEPT

Well# : EIMERS

Public Water System Number 2250023

1/28/02 10:01:54 AM

1. System Construction		SCORE			
Drill Date	8/16/66				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		2			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	1	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	3	3	2
(Score = # Sources X 2 ) 8 Points Maximum		6	6	6	4
Sources of Class II or III leacheable contaminants or 4 Points Maximum	YES	4	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B Less Than 25% Agricultural Land		0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	8	8	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II Less than 25% Agricultural Land		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	

Total Potential Contaminant Source / Land Use Score - Zone III	2	2	2	0
Cumulative Potential Contaminant / Land Use Score	16	14	14	5
4. Final Susceptibility Source Score	9	9	9	8
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report

Public Water System Name :

GRANGEVILLE WATER DEPT

Well# : MYRTLE ST ST. WELL

Public Water System Number 2250023

1/28/02 11:14:54 AM

1. System Construction	SCORE				
Drill Date	2/26/94				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score	1				
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score	2				
3. Potential Contaminant / Land Use - ZONE 1A	IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A	1	1	1	1	
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	35	45	41	7
(Score = # Sources X 2 ) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	8	13	8	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B 25 to 50% Non-Irrigated Agricultural Land		1	1	1	1
Total Potential Contaminant Source / Land Use Score - Zone 1B	13	13	13	9	
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	

Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		19	19	19	10
4. Final Susceptibility Source Score					
		7	7	7	7
5. Final Well Ranking					
		Moderate	Moderate	Moderate	Moderate

# Ground Water Susceptibility Report

Public Water System Name :

GRANGEVILLE WATER DEPT

Well# : PARK WELL

Public Water System Number 2250023

1/28/02 10:02:30 AM

1. System Construction		SCORE			
Drill Date	1/1/77				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		4			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		2			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	41	55	53	13
(Score = # Sources X 2 ) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	5	25	28	
4 Points Maximum		4	4	4	

Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
-----					
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	12	12	8
-----					
Potential Contaminant / Land Use - ZONE II					
-----					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Non-Irrigated Agricultural	1	1	1	
-----					
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
-----					
Potential Contaminant / Land Use - ZONE III					
-----					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
-----					
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
-----					
Cumulative Potential Contaminant / Land Use Score		20	20	20	10
-----					
4. Final Susceptibility Source Score		10	10	10	10
-----					
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

#### Ground Water Susceptibility Report

Public Water System Name :

GRANGEVILLE WATER DEPT

Well# : SPENCER WELL

Public Water System Number 2250023

1/28/02 11:15:05 AM

1. System Construction			SCORE			
	Drill Date	1/1/66				
	Driller Log Available	YES				
	Sanitary Survey (if yes, indicate date of last survey)	YES	2001			
	Well meets IDWR construction standards	NO	1			
	Wellhead and surface seal maintained	YES	0			
	Casing and annular seal extend to low permeability unit	NO	2			
	Highest production 100 feet below static water level	NO	1			
	Well located outside the 100 year flood plain	YES	0			
Total System Construction Score			4			
2. Hydrologic Sensitivity						
	Soils are poorly to moderately drained	YES	0			
	Vadose zone composed of gravel, fractured rock or unknown	YES	1			
	Depth to first water > 300 feet	NO	1			
	Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score			4			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
	Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
	Farm chemical use high	NO	0	0	0	

IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
-----					
Potential Contaminant / Land Use - ZONE 1B					
-----					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2 ) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B Less Than 25% Agricultural Land		0	0	0	0
-----					
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	2
-----					
Potential Contaminant / Land Use - ZONE II					
-----					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II Less than 25% Agricultural Land		0	0	0	
-----					
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
-----					
Potential Contaminant / Land Use - ZONE III					
-----					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
-----					
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
-----					
Cumulative Potential Contaminant / Land Use Score		6	6	6	2
-----					
4. Final Susceptibility Source Score		9	9	9	9
-----					
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate